AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claims 1-6 (Canceled).

Claim 7 (Currently amended): ~~The isolated nucleic acid of claim 1,~~ An isolated nucleic acid comprising a nucleotide sequence encoding a functional ND4 mitochondrial protein, wherein the nucleotide sequence comprises the sequence of SEQ ID NO:1.

Claim 8 (Currently amended): The isolated nucleic acid of claim [[1]] 7, wherein the nucleic acid is comprised within an expression vector.

Claim 9 (Previously presented): The isolated nucleic acid of claim 8, wherein the expression vector is a plasmid.

Claim 10 (Currently amended): The isolated nucleic acid of claim [[1]] 7, wherein the nucleic acid is comprised within an rAAV virion.

Claim 11 (Currently amended): The isolated nucleic acid of claim [[1]] 7, wherein the ~~non-naturally occurring~~ nucleic acid further comprises a nucleotide sequence encoding a mitochondrial targeting sequence.

Claim 12 (Currently amended): The isolated nucleic acid of claim [[1]] 7, wherein the nucleic acid further comprises a promoter operably linked to the nucleotide sequence.

Claim 13 (Currently amended): The isolated nucleic acid of claim [[1]] 7, wherein the nucleic acid further comprises an enhancer element.

Claim 14 (Currently amended): The isolated nucleic acid of claim [[1]] 7, wherein the ~~non-naturally occurring~~ nucleic acid further comprises a polyA tail.

Claim 15 (Currently amended): A cell into which has been introduced a nucleic acid comprising a nucleotide sequence encoding a functional ND4 mitochondrial protein wherein ~~said sequence comprises at least one codon substitution of a mitochondrial codon with a nuclear codon~~ the nucleotide sequence comprises the sequence of SEQ ID NO:1.

Claim 16 (Original): The cell of claim 15, wherein the cell is a human cell.

Claim 17 (Original): The cell of claim 16, wherein the cell is a human nerve cell.

Claim 18 (Original): The cell of claim 17, wherein the human nerve cell is located in the optic nerve of a human subject.

Claim 19 (Withdrawn): A method for reducing dysfunction in a cell caused by a mtDNA mutation associated with Leber Hereditary Optic Neuropathy, the method comprising the steps of:

(a) providing a cell having a gene comprising the mtDNA mutation; and

(b) introducing into the cell a sufficient amount of a non-naturally occurring nucleic acid comprising (i) a nucleotide sequence that encodes a functional ND4 mitochondrial protein and that differs from a naturally occurring nucleic acid that encodes a ND4 mitochondrial protein by at least one codon substitution and (ii) a nucleotide sequence that encodes a mitochondrial targeting sequence.

Claim 20 (Withdrawn): The method of claim 19, wherein the non-naturally occurring nucleic acid further comprises a promoter operably linked to the nucleotide sequence that encodes a functional ND4 mitochondrial protein.

Claim 21 (Withdrawn): The method of claim 19, wherein the non-naturally occurring nucleic acid further comprises an enhancer element.

Claim 22 (Withdrawn): The method of claim 19, wherein the non-naturally occurring nucleic acid further comprises a polyA tail.

Claim 23 (Withdrawn): The method of claim 19, wherein the cell is a human cell.

Claim 24 (Withdrawn): The method of claim 23, wherein the cell is a human nerve cell.

Claim 25 (Withdrawn): The method of claim 24, wherein the human nerve cell is located in the optic nerve of a human subject.